

**Appendix D.9**  
**Fuel Tank Repair**

Number of Tanks Repaired: 256

Emission Source Type: Stationary

Emission Source ID: F-

## S.1 Background

### S.1.1 General

The Fuel System Repair Section maintains and repairs external and internal aircraft fuel tanks (Appendix AAA-14). Building 1335 houses the section's offices and external tank repair shop and Hangar 1332 is used to repair external tanks, internal tanks, and other fuel system components.

Fuel tanks are initially purged using NIL-F-3829 (fluid-purging and preservation) to lower the fuel vapor concentration before any work is done. Free liquid is drained, and the tank is vacuumed out to remove any remaining liquid. In both Hangars 1332 and 200 and Building 1335, the purge unit is connected to the tank, and air is passed through the tank into a flexible hose that runs from the shop floor to an 8-inch roof vent. JP-8 vapor is discharged to the atmosphere through the vent. The following operations are the sources of VOC and HAP emissions: loading of JP-8 fuel into bowsers and purging of the fuel vapors from the tank. Products used for tank repair/maintenance are accounted for in the category "Miscellaneous Chemical Usage."

## S.2 Emission Calculation Method

VOC and HAP emissions were calculated based on the approach presented in the *Air Emissions Inventory Guidance Document for Stationary Sources at Air Force Installations* (USAF IERA, 1999). The aircraft fuel cell maintenance records are summarized in Table S-1. The APIMS standard algorithm code CELL-01 was identified to calculate VOC and speciate HAP emissions.

VOC emissions associated with purging were calculated using the following equation:

$$VOC_{purge} = 0.0023 * V * 0.134 * 2 * NFC$$

where:

- 0.0023 = Saturation vapor density of JP-8 at 70°F, lb/ft<sup>3</sup>
- V = Volume capacity of the fuel cell, gals
- 0.134 = Conversion factor (ft<sup>3</sup>/gal)
- 2 = Number of saturated volumes of fuel cell air that are assumed to be purged prior to maintenance
- NFC = Number of tank fuel cells with a volume equal to V that were entered for maintenance during the year (cells/yr).

HAP emissions were calculated by multiplying the total VOC emissions by the vapor-phase weight fraction in the fuel.

### **S.3 Sample Calculations**

- Aircraft type: F-15E.
- Tank No. 1 Capacity: 600 gals.
- Number of tanks repaired in 2005: 31.

#### **S.3.1.1 VOC Calculations**

$$\text{VOC}_{\text{purge}} = \left( 0.0023 \frac{\text{lb}}{\text{ft}^3} \right) (600 \text{ gals}) \left( 0.134 \frac{\text{ft}^3}{\text{gal}} \right) \left( 31 \frac{\text{tanks}}{\text{yr}} \right) (2) = 11.47 \frac{\text{lbs}}{\text{yr}}$$

#### **S.3.1.2 Total Toluene Calculations**

Toluene weight percent in vapor phase: 1.65%.

$$\text{Toluene} = \left( \frac{1.65}{100} \right) \left( 11.47 \frac{\text{lbs}}{\text{yr}} \right) = 0.19 \frac{\text{lb}}{\text{yr}}$$

### **S.4 Actual Emissions**

The APIMS Process ID and actual annual VOC emissions are presented in Table S-3. The actual annual HAP emissions are presented in Table S-4.

### **S.5 Potential Emissions Summary**

Potential emissions were based on  $K_{p/a} = 1.5$ . The APIMS Process ID and potential annual VOC emissions are presented in Table S-5. The potential annual HAP emissions are presented in Table S-6.

**Table S-1**  
**CY 2005 AIRCRAFT FUEL CELL MAINTENACE**

Aircraft	Tank ID	Tank Capacity, gal	Number of Tanks Repaired
F-15E	Conf	730	13
	#1	600	31
	#2	230	5
	#3A	200	2
	Lt Wing	500	13
	Rt Wing	500	8
F-15C	Exterior	600	10
	#1	600	14
	Lt Aux	20	1
	Rt Wing	500	3
	Lt Wing	500	5
	Rt Aux	20	2
F-16CJ	#3A	200	2
	A1	340	42
	F2	160	21
	Aft Res	70	26
	Fwd Res	70	23
	Lt Wing	500	6
	Rt Wing	500	6
	Ext Wing	370	12
	Exterior C/L	300	4
	Vent	5	7

**Table S-2**  
**AIRCRAFT FUEL CELL MAINTENANCE HAP SPECIATION**

HAP	CAS No.	Vapor Phase Wt Percent (%) <sup>1</sup>
		JP-8
Ethylbenzene	100-41-4	0.86
P-Xylene	106-42-3	0.71
M-Xylene	108-38-3	2.42
Toluene	108-88-3	1.65
Hexane	110-54-3	0.84
2,2,4-Trimethylpentane	540-84-1	0.02
Benzene	71-43-2	0.2
Naphthalene	91-20-3	0.38
O-Xylenes	95-47-6	1.61
Cumene	98-82-8	0.29
Xylene (mixed)	1330-20-7	0
MTBE	1634-04-4	0

Note:

1 Volatile Speciation for JP-8 based on Air Emissions Inventory Guidance Document for Stationary Sources at Air Force Installations (USAF Institute for Environment, Safety, and Occupational Risk Analysis, 2001).

## 2005 Actual Emissions

Table S-3

**Calculation Name:** FUEL CELL MAINTENANCE

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
IFU14951863..	FUEL TRANSFER AND PURGING	1663 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	56.5517	0.028276

## 2005 HAP Actual Emissions

Table S-4

*Calculation Name:* FUEL CELL MAINTENANCE

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
!FU14951663--	FUEL TRANSFER AND PURGING	1663 100414		ETHYLBENZENE	0.4663	0.000243
!FU14951663--	FUEL TRANSFER AND PURGING	1663 71432		BENZENE	0.1129	0.000057
!FU14951663--	FUEL TRANSFER AND PURGING	1663 98828		CUMENE	0.1641	0.000083
!FU14951663--	FUEL TRANSFER AND PURGING	1663 106423		P-XYLENE	0.4016	0.000202
!FU14951663--	FUEL TRANSFER AND PURGING	1663 110543		HEXANE	0.475	0.000239
!FU14951663--	FUEL TRANSFER AND PURGING	1663 91203		NAPHTHALENE	0.2149	0.000108
!FU14951663--	FUEL TRANSFER AND PURGING	1663 108833		TOLUENE	0.9332	0.000467
!FU14951663--	FUEL TRANSFER AND PURGING	1663 108383		M-XYLINE	1.3688	0.000686
!FU14951663--	FUEL TRANSFER AND PURGING	1663 95476		O-XYLINE	0.9106	0.000455
!FU14951663--	FUEL TRANSFER AND PURGING	1663 1330207		XYLENE (MIXED)	2.6806	0.001345
!FU14951663--	FUEL TRANSFER AND PURGING	1663 540841		2,2,4-TRIMETHYLPENTANE	0.0111	0.000004
!FU14951663--	FUEL TRANSFER AND PURGING	1663 2092664		2,2,3-TRIMETHYL PENTANE	0.0111	0.000004

## 2005 Potential Emissions

Table S-5

*Calculation Name:* FUEL CELL MAINTENANCE

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
IFU14951663--	FUEL TRANSFER AND PURGING	1663 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	84,827.55	0.042414

## 2005 HAP Potential Emissions

Table S-6

**Calculation Name:** FUEL CELL MAINTENANCE

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBs)	Emissions (Ton)
IFU14951663--	FUEL TRANSFER AND PURGING	1663 100414		ETHYL BENZENE	0.72945	0.0003645
IFU14951663--	FUEL TRANSFER AND PURGING	1663 71432		BENZENE	0.16935	0.0000855
IFU14951663--	FUEL TRANSFER AND PURGING	1663 98828		CUMENE	0.24615	0.0001245
IFU14951663--	FUEL TRANSFER AND PURGING	1663 106423		P-XYLENE	0.6024	0.000303
IFU14951663--	FUEL TRANSFER AND PURGING	1663 110543		HEXANE	0.7125	0.0003585
IFU14951663--	FUEL TRANSFER AND PURGING	1663 91203		NAPHTHALENE	0.32235	0.000162
IFU14951663--	FUEL TRANSFER AND PURGING	1663 108883		TOLUENE	1.3998	0.0007005
IFU14951663--	FUEL TRANSFER AND PURGING	1663 108383		M-XYLENE	2.0532	0.001029
IFU14951663--	FUEL TRANSFER AND PURGING	1663 95476		O-XYLENE	1.3659	0.0006825
IFU14951663--	FUEL TRANSFER AND PURGING	1663 1330207		XYLENE (MIXED)	4.0209	0.0020175
IFU14951663--	FUEL TRANSFER AND PURGING	1663 540841		2,2,4-TRIMETHYLPENTANE	0.01665	0.0000006
IFU14951663--	FUEL TRANSFER AND PURGING	1663 2092664		2,2,3-TRIMETHYLPENTANE	0.01665	0.0000006

Appendix D.10  
Wastewater Treatment  
Plant

## T.1 Background

### T.1.1 General

Number of Wastewater Emission Sources: 2

Emission Source Type:  
Fugitive

Mountain Home AFB operates a 1.5-million gallon per day (MGD) wastewater treatment plant (WWTP). The design-average flow for the WWTP is 0.85 MGD and the actual average flow is 0.4 to 0.5 MGD. The WWTP receives mostly domestic wastewater from base housing and numerous restroom facilities located in offices throughout the base. There also are several sources of industrial wastewater from aircraft support activities. However, the industrial wastewater from large producers is pretreated prior to being discharged to the collection system, and the total flow from all industrial sources is estimated to be less than 5 to 10 percent of the total wastewater flow (Parsons Engineering Science, 1997).

The WWTP consists of the following:

- Headworks (two structures housing a bar screen and the influent pump station);
- Three 354,000-gallon sequencing batch reactors (SBRs) for primary treatment;
- Chlorination/dechlorination process;
- Multi-purpose pump station for distribution of effluent;
- 11 infiltration basins;
- Storage lagoon; and
- Sludge processing facility.

The SBR process consists of filling the SBR tank, aeration, anoxic mixing, settling, and decanting the water while it flows to the chlorine contact tank. Physical details regarding dimensions of pertinent processes and equipment is included in Table T-1.

Semi-annual influent and effluent water sampling was implemented for CY 2005 to identify VOCs (Appendix AAA-15). Influent water samples were collected prior to the SBRs and effluent water samples were collected from the WWTP. VOCs were detected in the influent and effluent water samples during the first quarter for CY 2005 (Table 2).

The first quarter monthly influent and effluent throughput are summarized in Table T-3.

## T.2 Emission Calculation Method

An APIMS algorithm code WWT-50 was developed to replace the EPA Wastewater Treatment Compound Property Processor and Air Emissions Estimator program (WATER8) model. The algorithm is based on reported VOC concentrations.

### T.2.1 VOC Calculation (Effluent)

- Effluent throughput = 34.4 million gallons/4th quarter
- Total VOC Concentrations:  
= 19.0 ug/L + 5.7 ug/L + 33.1 ug/L  
= 57.8 ug/L

$$\text{VOC} = EF * 3.785 * 2.205E - 09 * \text{Throughput}$$

where:

VOC = Emissions (lb/yr);

EF = Emission factor (Reported concentration) in ug/L;

Conversion factor = 3.785 L/gal;

Conversion factor =  $\frac{0.002205 \text{ lb}}{1E 06 \text{ ug}}$

Throughput = Million gallons (MG).

$$\text{VOC}_{\text{Total}} = \left( 57.8 \frac{\text{ug}}{\text{L}} \right) \left( 3.785 \frac{\text{L}}{\text{gal}} \right) \left( 2.205E - 09 \frac{\text{lb}}{\text{ug}} \right) (34.4 E 06 \text{ gal}) = 16.6 \text{ lbs/yr}$$

## T.3 Actual Emissions Summary

The APIMS Process ID and actual annual criteria emissions are presented in Table T-4. Actual annual HAP emissions are presented in Table T-5.

## T.4 Potential Emissions Summary

Potential emissions are assumed to be equal to actual emissions because the plant operates continuously 8,760 hours per year.

**Table T-1**  
**WASTEWATER TREATMENT PLANT PROCESSES**

		Dimensions (English Units)					
Process	No. of Units	Length	Width	Max. Depth	Min. Depth	Surface Area	Influent Flow Rate
		ft	ft	ft	ft	ft <sup>2</sup>	gpm
SBRs	3	93	30	17	12	2,790	590.28
Chlorination/Dechlorination	1	150	18	8	8	2,700	590.28
Storage Lagoon	1	1,850	800	13	8	1,480,000	590.28
Infiltration Basins	11	400	300	1	0	120,000	590.28

		Dimensions (Metric Units)					
Process	No. of Units	Length	Width	Max. Depth	Min. Depth	Surface Area	Influent Flow Rate
		m	m	m	m	m <sup>2</sup>	m <sup>3</sup> /s
SBRs	3	28.3	9.1	5.2	3.7	259	0.0372
Chlorination/Dechlorination	1	45.7	5.5	2.4	2.4	251	0.0372
Storage Lagoon	1	563.9	243.8	4.0	2.4	137,496	0.0372
Infiltration Basins	11	121.9	91.4	0.3	0.0	11,148	0.0372

**Table T-2**  
**CY 2005 WASTEWATER TREATMENT PLANT ANALYTICAL RESULTS**

Sample # (Sample Date)	Comments	Analysis	COCs Detected
GT050002* (Mar. 08, 2005)	Influent	Total VOCs	Negligible
GT050003* (Mar. 08, 2005)	Effluent	Total VOCs	Bromodichloromethane (19.0 ug/L) Chlorodibromomethane (5.74 ug/L) Chloroform (33.1 ug/L)

Notes:

\* Water samples laboratory analyzed by Kemron Environmental Services.

Table T-3	
1ST QUARTER WASTEWATER TREATMENT	
THROUGHPUT FOR CY 2005	
Month	Effluent (Mgal)
January	11.91
February	10.48
March	12
First Quarter Total	34.39

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2005 Actual Emissions

Table T-4

*Calculation Name:* WWTP

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
WW21001381--EFF-CON	WWTP - EFFLUENT CONC	1381 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	85.9327	0.042966

## 2005 HAP Actual Emissions

Table T-5

Calculation Name: WWTP

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
WW21001381--EFF-CON	WWTP - EFFLUENT CONC	1381 75252	BROMOFORM		0.8898	0.000445
WW21001381--EFF-CON	WWTP - EFFLUENT CONC	1381 67663	CHLOROFORM		45.3486	0.022674
WW21001381--EFF-CON	WWTP - EFFLUENT CONC	1381 108883	TOLUENE		12.4852	0.006243

**Appendix D.11  
Petroleum Soil  
Bioremediation Site**

Number of Soil  
Bioremediation  
Sources: 3

Emission Source Type:  
Fugitive

Emission Source ID: RA

## **BB.1 Background**

### **BB.1.1 General**

The total soil volume remediated in CY 2005 is summarized in Table BB-1. VOC concentrations for each fuel type correspond to the average headspace samples collected in CY 2005. The contaminated soil is transported to the base landfarm for bioremediation activities. Bioremediation of soil is performed in several zones determined by contamination type. The first zone is for soils contaminated by fuels; the second zone is for soils contaminated by jet fuels; and the third and the fourth zones are for diesel and heavier fuels with hydrocarbon concentrations greater than 25,000 ppm (Appendix AAA-20).

## **EE.2 Emission Calculation Method**

A Mountain Home defined APIMS algorithm code RDL-51 was developed to calculate VOC emissions. The following equation (USEPA 1993), modified using an evaporation factor, was applied for estimating VOC emissions from the soil bioremediation site:

$$\text{VOC} = V * 0.037 * 764,555 * 1.52 * C * E_v * 10^{-6} * 10^{-3} * 2.205$$

where:

V	=	Volume of soil treated, ft <sup>3</sup> ;
0.037	=	Conversion factor, yd <sup>3</sup> /ft <sup>3</sup> ;
764,555	=	Conversion factor, cm <sup>3</sup> /yd <sup>3</sup> ;
1.52	=	Density of soil, g/cm <sup>3</sup> ;
C	=	Concentration of contaminant in soil, mg/kg;
E <sub>v</sub>	=	Evaporation factor, % (see Section M of this report);
10 <sup>-6</sup>	=	Conversion factor, kg/mg;
2.205	=	Conversion factor, lb/kg;
10 <sup>-3</sup>	=	Conversion factor, kg/g.

It was estimated that for JP-8 and diesel fuel E<sub>v</sub> ≈ 20%, and for gasoline E<sub>v</sub> ≈ 100%. HAP emissions were calculated based on the liquid-phase speciation of the fuel, Table BB-2. HAP emission factors were taken from the *Air Emissions Inventory Guidance Document for Stationary Sources at Air Force Installations* (USAF IERA 1999).

## **BB.3 Sample Calculations**

Bioremediation of soil contaminated with JP-8 fuel:

- Volume of soil treated: 36,342 yd<sup>3</sup>
- VOC concentration in soil before bioremediation: 2,500 mg/kg
- Toluene weight percent in liquid phase: 0.216%

### **BB.3.1 VOC Calculations**

$$\text{VOC} = \left( 36,342 \frac{\text{ft}^3}{\text{yr}} \right) \left( 764,555 \frac{\text{cm}^3}{\text{yd}^3} \right) \left( 0.037 \frac{\text{yd}^3}{\text{ft}^3} \right) \left( 1.52 \frac{\text{g}}{\text{cm}^3} \right) (2,500 \text{ mg/kg}) \left( \frac{20}{100} \right)$$

$$* \left( 10^{-6} \text{ kg/mg} \right) \left( 10^{-3} \text{ kg/g} \right) (2.205 \text{ lbs/kg}) = 1,724.5 \text{ lbs/yr}$$

### **BB.3.2 Toluene Calculations**

$$\text{Toluene} = (1,723 \text{ lbs/yr}) \left( \frac{0.216}{100} \right) = 3.72 \text{ lb/yr}$$

## **BB.4 Actual Emissions Summary**

The APIMS Process ID and actual VOC emissions are summarized in Table BB-3. Actual HAP emissions are summarized in Table BB-4.

## **BB.5 Potential Emissions Summary**

Potential emissions were estimated based on potential soil bioremediation volumes and calculations. Potential soil volumes were assumed to be two times the current cell volumes. VOC concentrations for each fuel type correspond to the average headspace samples collected in CY 2005, presented in Table BB-5. The APIMS Process ID and potential VOC emissions are summarized in Table BB-6. Potential HAP emissions are shown in Table BB-7.

**Table BB-1**  
**CY 2005 ACTUAL SOIL BIOREMEDIATION VOLUMES AND VOC CONCENTRATIONS**

Contamination	Soil Volume (ft <sup>3</sup> )	VOC Concentration (mg/kg)
Diesel	21,206	667
Mogas	3,915	1,333
JP-8	36,342	2,500

**Table BB-2**  
**SOIL BIOREMEDIATION HAP SPECIATION**

HAP	CAS No.	Liquid Phase Weight Percent <sup>1</sup> (%)		
		JP-8	Mogas	Diesel
Benzene	71-43-2	0.033	1.8	0.2
Cumene	98-82-8	0.179	0.5	0.1
Ethylbenzene	100-41-4	0.157	1.4	0.2
Hexane (n-hexane)	110-54-3	0	1	0.04
Methyl tert-butyl ether	1634-04-4	0	4.5	0
Naphthalene	91-20-3	0.264	0.3	0.2
Toluene	108-88-3	0.216	7	0.4
2,2,4-Trimethylpentane	540-84-1	0.001	4	0
Xylenes (mixed isomers)	1330-20-7	1.173	7	0.8

Note:

- 1 Air Emissions Inventory Guidance Document for Stationary Sources at Air Force Installations (USAF Institute for Environment, Safety, and Occupational Risk Analysis, 1999).

## 2005 Actual Emissions

Table BB-3

Calculation Name: REMEDIATION

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
IER15971189--JP-8	LANDFARM JP-8	1189 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	1724.549	0.862275
IER15971190--DIES	LANDFARM DIESEL	1190 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	268.4796	0.13424
IER15971191--GAS	LANDFARM GASOLINE	1191 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	495.2889	0.247644
	Sum CAS: VOC				2488.3175	1.244159

## 2005 HAP Actual Emissions

Table BB-4

**Calculation Name:** REMEDIATION

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
IER15971189--JP-8	LANDFARM JP-8	1189 100414		ETHYLBENZENE	2.7075	0.001354
IER15971190--DIES	LANDFARM DIESEL	1190 100414		ETHYLBENZENE	0.537	0.000269
IER15971191--GAS	LANDFARM GASOLINE	1191 100414		ETHYLBENZENE	6.934	0.003467
			Sum CAS: 100414		10.1785	0.00509
IER15971189--JP-8	LANDFARM JP-8	1189 71432		BENZENE	0.5691	0.000285
IER15971190--DIES	LANDFARM DIESEL	1190 71432		BENZENE	0.537	0.000269
IER15971191--GAS	LANDFARM GASOLINE	1191 71432		BENZENE	8.9152	0.004458
			Sum CAS: 71432		10.0213	0.005012
IER15971189--JP-8	LANDFARM JP-8	1189 98828		CUMENE	3.0869	0.001543
IER15971190--DIES	LANDFARM DIESEL	1190 98828		CUMENE	0.2685	0.000134
IER15971191--GAS	LANDFARM GASOLINE	1191 98828		CUMENE	2.4764	0.001238
			Sum CAS: 98828		5.8318	0.002915
IER15971190--DIES	LANDFARM DIESEL	1190 110543		HEXANE	0.1074	0.000054
IER15971191--GAS	LANDFARM GASOLINE	1191 110543		HEXANE	4.9529	0.002476
			Sum CAS: 110543		5.0603	0.002933
IER15971189--JP-8	LANDFARM JP-8	1189 91203		NAPHTHALENE	4.5528	0.002276
IER15971190--DIES	LANDFARM DIESEL	1190 91203		NAPHTHALENE	0.537	0.000269
IER15971191--GAS	LANDFARM GASOLINE	1191 91203		NAPHTHALENE	1.4859	0.000743
			Sum CAS: 91203		6.5757	0.003288
IER15971189--JP-8	LANDFARM JP-8	1189 108883		TOLUENE	3.725	0.001863
IER15971190--DIES	LANDFARM DIESEL	1190 108883		TOLUENE	1.0739	0.000537
IER15971191--GAS	LANDFARM GASOLINE	1191 108883		TOLUENE	34.6702	0.017335
			Sum CAS: 108883		39.4691	0.019735
IER15971189--JP-8	LANDFARM JP-8	1189 1330207		XYLENE (MIXED)	20.229	0.010115
IER15971190--DIES	LANDFARM DIESEL	1190 1330207		XYLENE (MIXED)	2.1478	0.001074
IER15971191--GAS	LANDFARM GASOLINE	1191 1330207		XYLENE (MIXED)	34.6702	0.017335
			Sum CAS: 1330207		57.047	0.028524
IER15971189--JP-8	LANDFARM JP-8	1189 540841		2,2,4-TRIMETHYLPENTANE	0.0172	0.000009
IER15971190--DIES	LANDFARM GASOLINE	1191 540841		2,2,4-TRIMETHYLPENTANE	19.8116	0.009906
IER15971191--GAS	LANDFARM GASOLINE	1191 1634044		METHYL TERT-BUTYL ETHER	19.8288	0.009915
					22.288	0.011144

**Table BB-5**  
**CY 2005 POTENTIAL SOIL BIOREMEDIAL VOLUMES AND VOC CONCENTRATIONS**

Contamination	Soil Volume (ft <sup>3</sup> )	VOC Concentration (mg/kg)
Diesel	42,412	667
Mogas	7,830	1,333
JP-8	72,684	2,500

## 2005 Potential Emissions

Table BB-6

**Calculation Name:** REMEDIATION

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	536.9592	0.26848
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	990.5779	0.495289
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007 VOC		VOLATILE ORGANIC COMPOUNDS (VOC)	3449.098	1.724549
	Sum CAS: VOC				4976.6351	2.488318

## 2005 Potential Emissions

Table BB-7

**Calculation Name:** REMEDIATION

Process ID	Process Name	Unique Process ID	CAS No.	Chem. Name	Emissions (LBS)	Emissions (Ton)
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	100414	ETHYL BENZENE	1,0739	0.000537
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	100414	ETHYL BENZENE	13,8681	0.006934
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	100414	ETHYL BENZENE	5,4151	0.002708
				Sum CAS: 100414	20,3571	0.010179
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	71432	BENZENE	1,0739	0.000537
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	71432	BENZENE	17,8304	0.008915
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	71432	BENZENE	1,1382	0.000569
				Sum CAS: 71432	20,0425	0.010021
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	98828	CUMENE	0.537	0.000269
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	98828	CUMENE	4,9529	0.02476
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	98828	CUMENE	6,1739	0.03087
				Sum CAS: 98828	11,6638	0.005832
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	110543	HEXANE	0.2148	0.000107
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	110543	HEXANE	9,9058	0.004953
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	110543	HEXANE	10,1206	0.005006
				Sum CAS: 110543		
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	91203	NAPHTHALENE	1,0739	0.000537
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	91203	NAPHTHALENE	2,9717	0.001486
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	91203	NAPHTHALENE	9,1056	0.004553
				Sum CAS: 91203	13,1512	0.006576
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	108883	TOLUENE	2,1478	0.001074
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	108883	TOLUENE	69,3405	0.03467
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	108883	TOLUENE	7,4501	0.003725
				Sum CAS: 108883	78,9384	0.039469
IER10861005--	LANDFARM - DIESEL (POTENTIAL)	1005	1330207	XYLENE (MIXED)	4,2957	0.002148
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	1330207	XYLENE (MIXED)	69,3405	0.03467
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	1330207	XYLENE (MIXED)	40,4579	0.020229
				Sum CAS: 1330207	114,0941	0.057047
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	540841	2,2,4-TRIMETHYLPENTANE	39,6231	0.019812
IER10861007--	LANDFARM - JP-8 (POTENTIAL)	1007	540841	2,2,4-TRIMETHYLPENTANE	0.0345	0.000017
				Sum CAS: 540841	39,6576	0.019829
IER10861006--	LANDFARM- MOGAS (POTENTIAL)	1006	1634044	METHYL TERT-BUTYL ETHER	44,576	0.022288

**Appendix D.12**  
**Welding**

**Table X-1**  
**INSIGNIFICANT ACTIVITY**  
**SUMMARY OF WELDING OPERATIONS FOR CY 2005**

Location	Welding Process	Electrode Type	Quantity Used (lb/yr)
HEAVYEQ	SMAW	E6010	50
		E6011	0
		E7018	50
		E7028	0
CEVERT & STRUCTURES	SMAW	E6010	0
		E6011	0
		E7018	100
		E7028	0
METALS TECH	SMAW	E6010	0
		E6011	0
		E7018	25
		E7028	0
TOTAL	SMAW	E6010	50
		E6011	0
		E7018	175
		E7028	0

**Appendix D.13  
Composite Sanding  
Booth Activities**

**Table D-12.2.2.1-14-1**  
**Insignificant Activities**  
**Composite Booth PTE**

Criteria Pollutants							
Source	PM ton/yr	PM <sub>10</sub> ton/yr	CO ton/yr	NO <sub>x</sub> ton/yr	SO <sub>2</sub> ton/yr	VOC ton/yr	Pb ton/yr
Sanding Booth	1.3	1.3					
Sanding Booth Comfort Heater	0.09	0.09	1.02	1.21	0.01	0.07	6.05E-06
<i>Total</i>	1.39	1.39	1.02	1.21	0.01	0.07	6.05E-06
<i>IDAPA Category I Exemption EL</i>	2.5	1.5	10	4	4	4	0.06
<i>Comparison</i>	Below	Below	Below	Below	Below	Below	Below
<i>Modeling Threshold</i>		1.0	na	1.0	1.0	na	0.6
<i>Required Modeling</i>		Yes		Yes	No		No

Source	PM lb/hr	PM <sub>10</sub> lb/hr	CO lb/hr	NO <sub>x</sub> lb/hr	SO <sub>2</sub> lb/hr	VOC lb/hr	Pb lb/hr
Sanding Booth	0.30	0.30					
Sanding Booth Comfort Heater	0.02	0.02	0.23	0.28	0.002	0.02	1.38E-06
<i>Total</i>	0.32	0.32	0.23	0.28	0.002	0.02	1.38E-06
<i>Modeling Threshold</i>		0.2	14.0	na	0.2	na	na
<i>Required Modeling</i>		Yes	No		No		

Toxic Air Pollutants							
Organics							
Pollutant	CAS No.	Sanding	Sanding	Total	Level 1	BRC IDAPA	Comparison
		Booth	Comfort		IDAPA 58.01.01.5 85/586 (lb/hr)		
3-Methylchloranthrene	56-49-5			4.97E-09	4.97E-09	2.50E-06	Below
Benzene	71-43-2			5.80E-06	5.80E-06	8.00E-04	Below
Benzo(a)pyrene	50-32-8			3.31E-09	3.31E-09	2.00E-06	Below
Butyl Alcohol	71-36-3				1.00E+01	Below	9.00E+00
Dielethylene Triamine	111-40-0				2.67E-01	Below	2.40E-01
Ethyl Alcohol	64-17-5				1.25E+02	Below	1.13E+02
Ethyl Benzene	100-41-4				2.90E+01	Below	2.61E+01
Formaldehyde	50-00-0			2.07E-04	2.07E-04	5.10E-04	Below
Hydrogenated Terphenyl	37275-59-5				3.33E-01	Below	3.00E-01
Hexane	110-54-3			4.97E-03	4.97E-03	1.20E+01	Below
Isopropyl Alcohol	67-63-0				6.53E+01	Below	5.88E+01
Kaolin	1332-58-7				1.33E-01	Below	1.20E-01
Methyl Ethyl Ketone	78-93-3				3.93E+01	Below	3.54E+01
N-Butyl Acetate	123-86-4				4.73E+01	Below	4.26E+01
Naphthalene	91-20-3			1.68E-06	1.68E-06	3.33E+00	Below
Pentane	109-66-0			7.18E-03	7.18E-03	1.18E+02	Below
Terphenyl	26140-60-3					3.13E-01	Below
Toluene	108-88-3			9.39E-06	9.39E-06	2.50E+01	Below
Xylenes	1330-20-7					2.90E+01	Below

Metals							
Pollutant	CAS No.	Sanding	Sanding	Total	Level 1	BRC IDAPA	Comparison
		Booth	Comfort		IDAPA 58.01.01.5 85/586 (lb/hr)		
Arsenic	7440-38-2			5.52E-07	5.52E-07	1.50E-06	Below
Barium	7440-39-3			1.21E-05	1.21E-05	3.30E-02	Below
Beryllium	7440-41-7			3.31E-08	3.31E-08	2.80E-05	Below
Cadmium	7440-43-9			3.04E-06	3.04E-06	3.70E-06	Below
Chromium	7440-47-3			3.86E-06	3.86E-06	3.30E-02	Below
Cobalt	7440-48-4			2.32E-07	2.32E-07	3.30E-03	Below
Copper	7440-50-8			2.35E-06	2.35E-06	1.30E-02	Below
Manganese	7439-96-5			1.05E-06	1.05E-06	6.70E-02	Below
Mercury	7439-97-6			7.18E-07	7.18E-07	1.00E-03	Below
Molybdenum	7439-98-7			3.04E-06	3.04E-06	3.33E-01	Below
Nickel	7440-02-0			5.80E-06	5.80E-06	2.75E-05	Below
Selenium	7782-49-2			6.63E-08	6.63E-08	1.30E-02	Below
Vanadium	1314-62-1			6.35E-06	6.35E-06	3.00E-03	Below
Zinc	7440-66-6			8.01E-05	8.01E-05	3.33E-01	Below



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

Dirk Kempthorne, Governor  
Toni Hardesty, Director

May 8, 2006

**Certified Mail No.7005 1160 0000 1550 3819**

Colonel Charles K. Shugg, USAF  
Wing Commander  
Mountain Home Air Force Base  
366 Gunfighter Ave. Suite 331  
Mountain Home Air Force Base, ID 83649-5299

RE: Facility ID No. 039-00001, Mountain Home Air Force Base, Mountain Home  
Composite Sanding Booth, PTC Exemption

Dear Colonel Shugg:

On March 15, 2005, the Department of Environmental Quality (DEQ) received a Permit to Construct (PTC) exemption concurrence request from Mountain Home Air Force Base (MHAFB) for the construction of a composite sanding booth at their facility in Mountain Home. Based on review of the submittal and all applicable state and federal rules and regulations, DEQ has determined that the project is exempt from PTC requirements in accordance with IDAPA 58.01.01.221 and is a Level I toxic exempt source in accordance with IDAPA 58.01.01.223.02. Please be advised that recordkeeping for this exemption is required in accordance with IDAPA 58.01.01.220.02 and that an annual report for toxic air pollutant exemption is required in accordance with IDAPA 58.01.01.223.05.

This letter is in no way intended to supersede any other federal, state, or local rules and regulations that may apply. Also, be advised that this letter does not constitute a waiver of any compliance actions that may result from misinformation or noncompliance of the criteria set in the submittal received for this project that may cause unreasonable risk to human or animal life, or violate any ambient air quality standard.

If you have any questions regarding this letter or our permitting process, please contact Bill Rogers, Permit Coordinator, at (208) 373-0437.

Sincerely,

Mike Simon

Stationary Source Program Manager  
Air Quality Program

MB/TA/bf

X-050007

**Appendix D.14  
Offsite Activities**



IDaho DEPARTMENT  
OF HEALTH AND WELFARE

DIVISION OF  
ENVIRONMENTAL QUALITY

1410 North Hilton, Boise, ID 83706-1255, (208) 334-0502

R E C E I V E D

FEB 6 1995

CH<sup>2</sup>M HILL  
BOISE

Philip E. Batt Governor

February 1, 1995

Carey Felzien  
Project Engineer  
CH<sup>2</sup>M HILL  
700 Clearwater Lane  
Boise, Idaho 83712-7708

Re: Mountain Home Air Force Base/Saylor Creek Bombing Range  
Tier I Operating Permit Question

Dear Ms. Felzien:

On January 9, 1995, you contacted me for a determination on whether or not the Division of Environmental Quality (DEQ) considers the Saylor Creek Bombing Range (Saylor Creek) as being part of the Mountain Home Air Force Base for the purpose of the base's Tier I operating permit application. Your written request was received January 10, 1995, and contained operational information for DEQ's consideration in making a determination. Based on the information submitted, DEQ has determined that the Saylor Creek Bombing Range should not be considered part of the Mountain Home Air Force Base (MHAFB) facility.

In making this determination, DEQ considered the definition of a facility according to IDAPA 16.01.01.006.35 in the Rules for the Control of Air Pollution in Idaho (Rules). The definition reads as follows: *All of the combined sources which emit air pollutants, belong to the same industrial grouping (using the Major Groups as described in the Standard Industrial Classification Manual), are located on one or more contiguous or adjacent properties, and are owned or operated by the same person or by persons under common control.* The definition clearly states that there are three (3) separate items that must be met for consideration as part of a facility.

1) Same industrial grouping

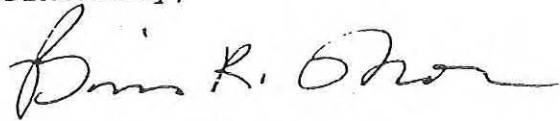
The combined sources at each of the two areas belongs to the same industrial grouping of 9711 - National Security in the Standard Industrial Code manual. Therefore, the MHAFB and Saylor Creek meet this requirement of the definition.

Mtn Home AFB/Saylor Creek Letter  
February 1, 1995  
Page 2

- 2) Located on one or more contiguous or adjacent properties  
The two properties are separated by 40 miles distance, and therefore, are not considered adjacent to each other.
- 3) Common ownership or control  
The facsimile submittal clearly states that although ANHTECH provides maintenance services for the equipment, MHAFB personnel actually operate Saylor Creek. Since MHAFB personnel also operate the base proper, Saylor Creek and MHAFB meet this requirement.

In summary, based on the information presented to DEQ, Saylor Creek meets the SIC grouping and common control requirements of the facility definition. However, Saylor Creek cannot be considered an adjacent property to the MHAFB. Therefore, MHAFB should not include Saylor Creek in the MHAFB Tier I operating permit application.

Sincerely,

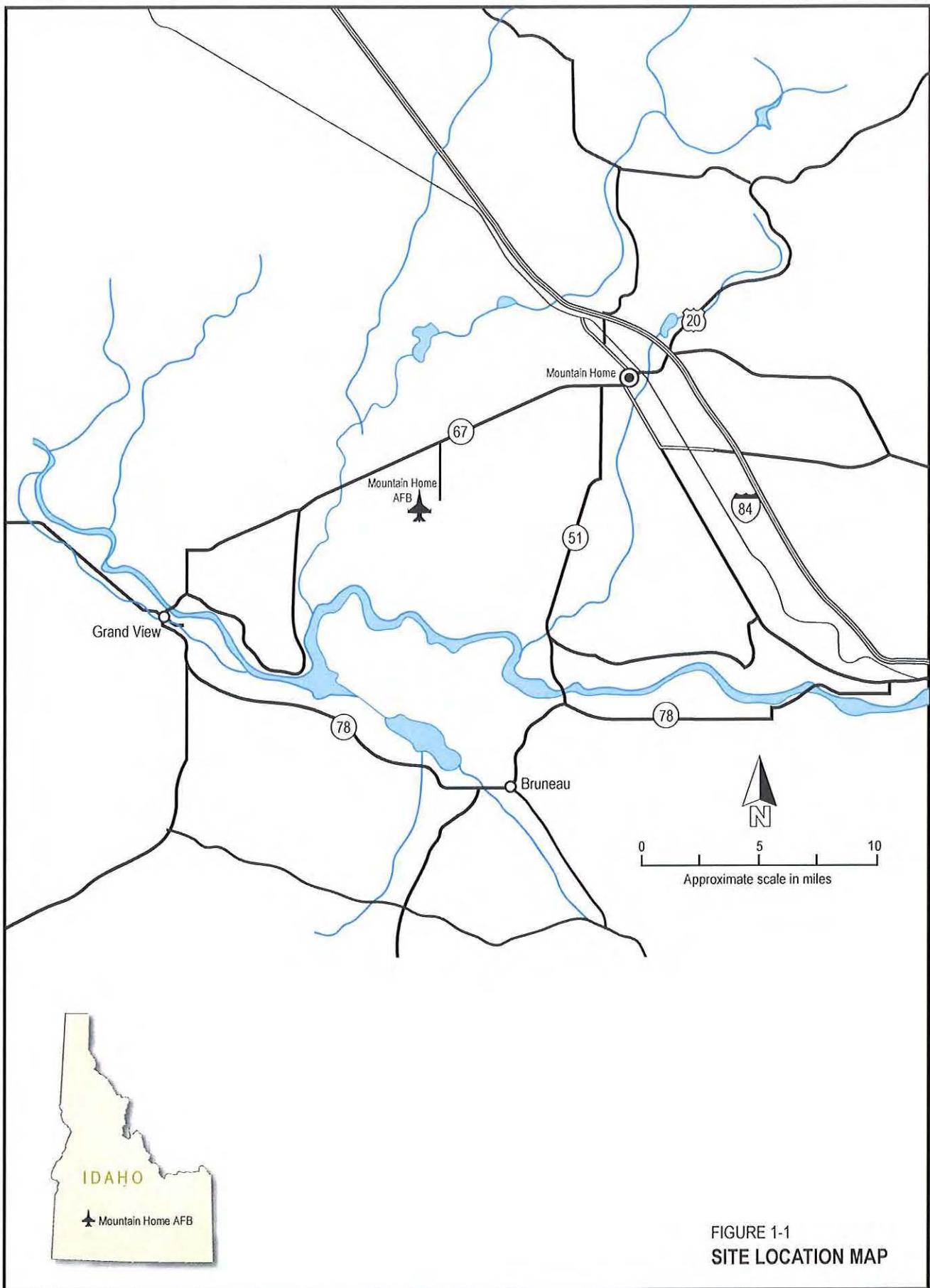


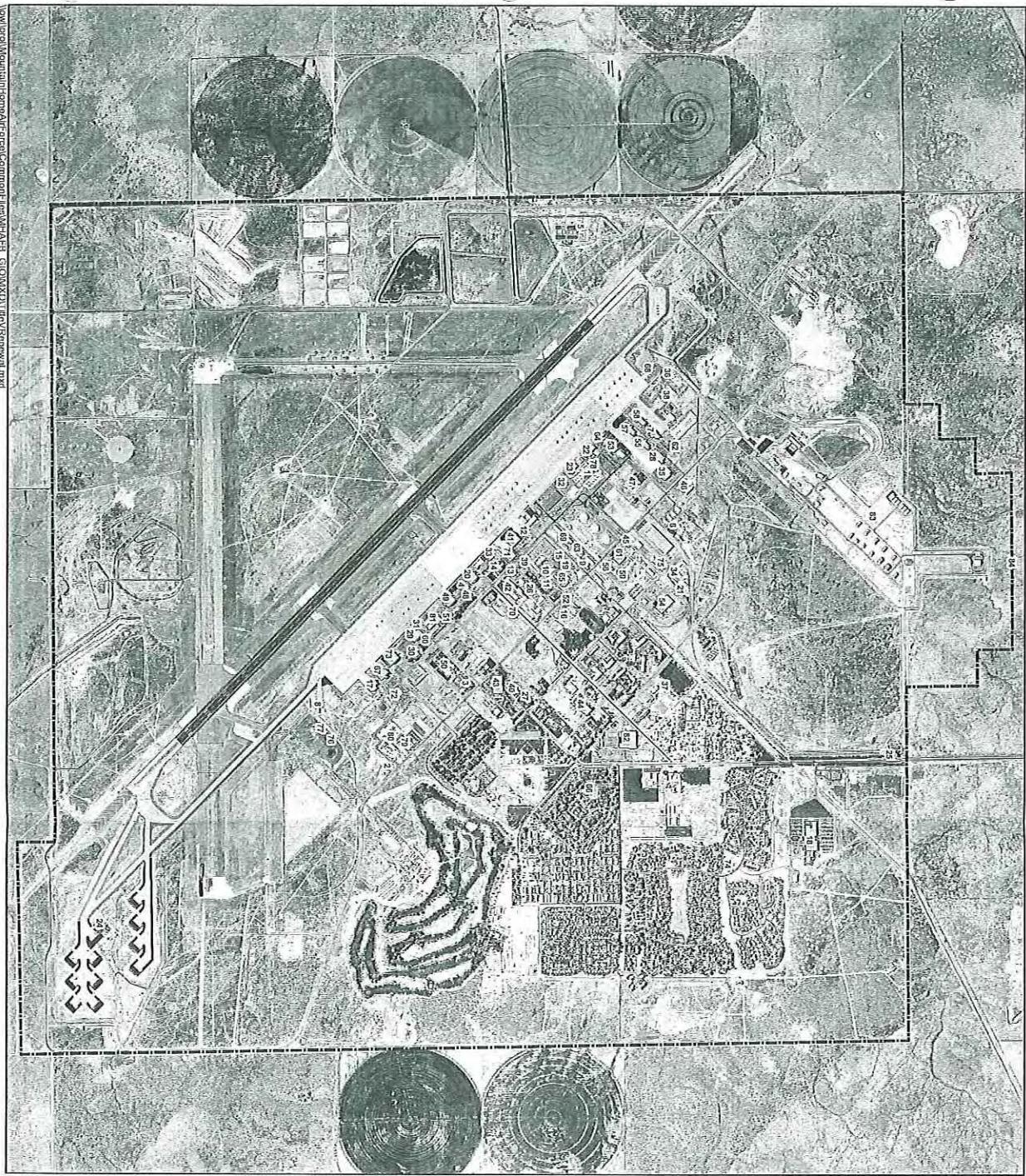
Brian Monson, Chief  
Operating Permits Bureau  
Permits and Enforcement

BRM\SJR\DM:jrd-c...\darrin\letters\mtn\_1\_95.que

cc: Captain Monroe  
MHAFB Source File  
COF 1.1

## Figures





#(ord)	Structure Name
1	366TH EMS
2	20TH BSCS
3	366TH BAPT MANT BLDG
4	366TH BAPT MANT BLDG
5	366TH BAPT MANT BLDG
6	366TH CESSNA MANT FAC
7	366TH EMS MANT DOC HANGER
8	JET ENGINE TEST CELL
9	366TH CES MATERIAL CONTROL
10	MOTOR POOL MANT FACILITY
11	366TH FS
12	WEAPONS RELEASE SYS SHP
13	366 CS, COMM FAC
14	PARASHOT RIGGING BLC
15	MOTOR POOL MANT SHOP
16	HG WATER STORAGE RESERVOIR
17	B-1 HANGER
18	Bombing
19	366TH GS
20	366TH GS
21	WEAPONS "HANGER"
22	HAZ STORAGE FACILITY
23	366TH SUP
24	366TH EMS SUP USE STOR FAC
25	OLD BOMBER ALERT FACILITY
26	Villain's Corner
27	WOGG/HOTRD
28	366TH MANT DOC HANGER
29	366TH FS
30	366TH EMS, "HANGER"
31	366TH EMS, WEAPONS RELEASE SYS SHP
32	366TH GS, BASE OPS
33	366TH GCS, BASE OPS
34	DRAG WHALE SUPPLY EQUIP, BDE
35	JEI ENGINE SUPPLY
36	366TH GS, MAIN FACILITY
37	366TH GS, FACILITY
38	SP CENTRAL CTL GROUP
39	HEAD QUARTERS GROUP
40	366TH FS, "HANGER"
41	366TH FS
42	AIRCRAFT AVIONICS
43	366TH FW Headquarters
44	BSE SUPPLY ADMIN
45	ENVIRONMENT ENGINEERING
46	SP SMALL ARMS RANGE
47	SOON OPS FACILITY, (AVIONICS)
48	366TH ODS
49	366TH FS, "HANGER"
50	206TH TRANS MAINTENANCE BLDG
51	DAVINIER STA, TON ROSE, HOUSE
52	DAVITER PLANT MAIN BOOSTER PLANT
53	SQ OPS
54	366TH AVIONICS GROUP
55	366TH CESSNA MANT FAC HANGER
56	366TH CESSNA MANT FAC
57	366TH EMS MANT DOC HANGER
58	366TH EMS, MANT DOC CON
59	PRIME BEEF FACILITY/ OFFICE
60	AMOS
61	366th CES
62	366 SUP LOX STORAGE FAC
63	366TH SALTER OFFICE/CAMP SHP
64	AMX'S
65	MOTOR POOL
66	HOUSING MANT OFFICE
67	366TH CESSNA B-1 HANGER
68	PAD POWER CBL TEST CELL W/SR
69	POO
70	366TH OFFICE FUEL (AFRES)
71	366TH FS, FUEL SOURCE/OFS
72	366 KIOSK
73	366 FS, "HANGER"
74	FIRE STATION <sup>12</sup>
75	366SUP PACKAGING, CRATING FAC
76	FIRE TRAINING PIT AREA/FAC
77	366TH CES FIRE TRNG FAC PIT
78	366TH ACS
79	726TH ACS
80	MAIN FIRE STATION <sup>41</sup>
81	MAIN FIRE STATION <sup>41</sup>
82	BX
83	MCA, Multimedia Storage Area
84	Property Boundary